

FREE

HAM TV FUN AND INEXPENSIVE!

FREE

Ham TV is fun and inexpensive. You probably own most of the items which you need to start operating on ham TV right now. Don not confuse fast scan TV with slow scan TV. You do not need expensive converters. The pictures you send and receive on fast scan tv are exactly the same as you watch at home on TV right now. Unlike regular TV you have several advantages. You can pick the program material. You can show it to your friends. You can visit your friends without leaving home. You can watch the program sent to you by your friends--sound and pictures, in color. Its REAL LIVE TV!

You can also tune into NASA live video in many areas, thanks to ATV repeaters and individual stations who relay this information via HAM TV. Watch the space shuttle and other NASA programming, not what the news at 6 broadcasts in a few seconds.

You can DX via several modes with 500 miles being common and more than 1,000 miles having been done several times. The opportunity for DX increases as the number of operators increase. And the numbers are now well into the thousands throughout the country and the world. Or the ultimate DX, send your video to a space shuttle HAM TV station as was done on STS 37.

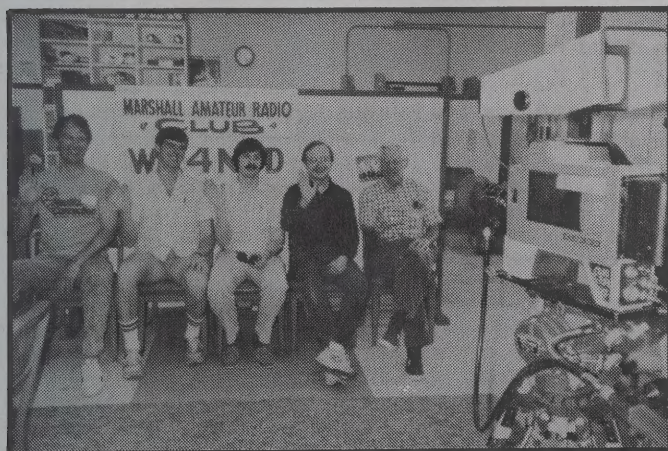
Portable and mobile operation are a breeze. HAM TV operators have already found out how easy and fun it is to operate in a variety of styles including hot air balloons, helium balloons, kites, cars, trucks, vans, planes, gliders, back packs, canoes, boats, ships, mountain tops, and city scapes. Instant DX from 1 watt transmitters at 125,000 feet allow stations to see live video from a camera slung under a helium balloon up to 500 miles in any direction.

Ham TV also provides valuable public service assistance. You can windshield survey disaster scenes back to public safety officials. Parades and athletic events, boating contests, mountain marathons, Santa visits and much more are all easily and more effectively done with your video signal.

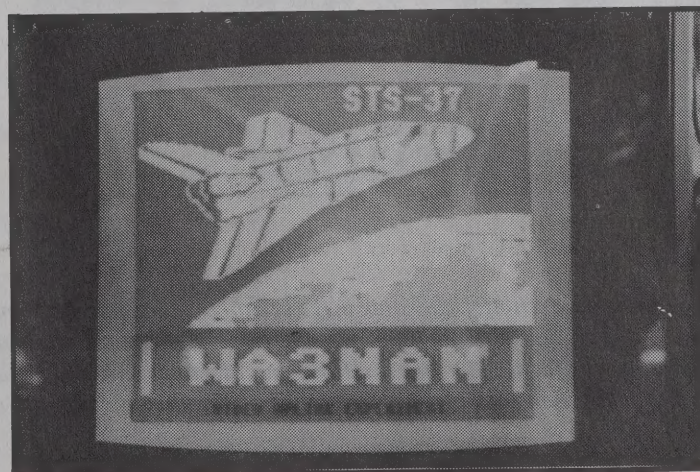
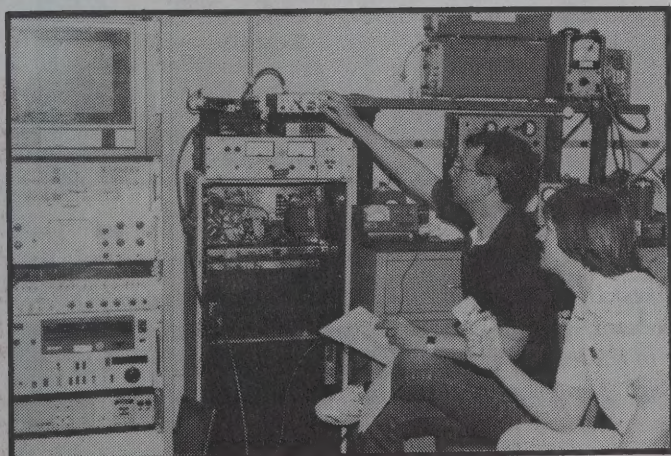
If flying is your love, you can put your Ham TV station in your R/C aircraft (or helicopter, boat, etc) and fly from the pilot's seat! Add real adventure to your earth bound self as your vehicle takes you places you can't go yourself.

If home construction is your forte, there are many opportunities to get excited with Ham TV. This is one area where the commercial rigs still play catch-up to what you can build yourself. Besides transceivers, antennas, preamps, and power amplifiers, you can build a host of station accessories to create special effects, start video recorders, remote control cameras, switch to weather radar signals, do computer graphics, audio/video switchers, signal analyzers, monitors, filters and much more.

All you need to start is a little curiosity, a ham license, and a desire to enjoy your hobby. The following pages include all the information you need to get started in Ham TV.



Top Left: Marshall ARC as they sent their live video to space shuttle Atlantis April 71991. Story about this and other ATV uplink stations in the July 1991 issue, ATVQ. Bottom left: Club members after fixing the "Mother of all amplifiers" test the uplink equipment. Below: Goddard Space Center uplink video. Video was sent and received in color.



HOW DO I FIND OUT ABOUT HAM TV?

- * Ask a CB'er
- * Ask your local Radio-TV Shop
- * Ask your local TV station
- * Read CQ, QST, 73, TV Guide, McCalls, Videography, Video Maker
- * Subscribe to ATVQ

The correct answer is:

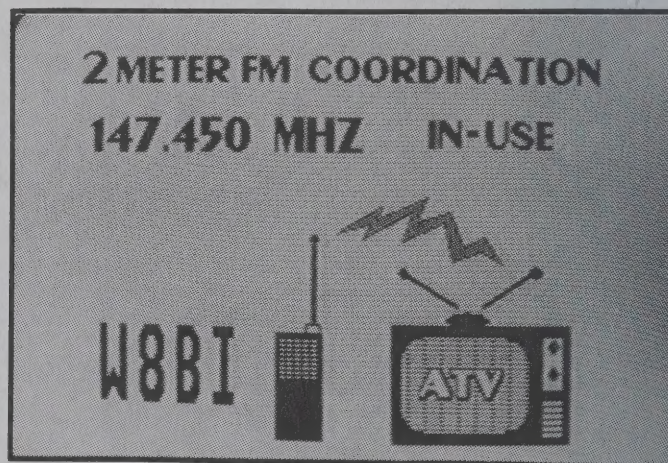
The first three will get you a lot of blank stares. There have been occasional articles in CQ, QST (on rare occasion) and Henry Ruh KB9FO managed to get articles in McCalls, Videography, Video Maker and a third article in TV Guide Aug. 1988, (others were in 1952 and 1974) and under the editorship of Bill Brown WB8ELK, 73 magazine has a regular ATV Column. You will also find regular ATV material in Radio Scan Magazine.

There is only one source of consistent accurate ATV information. That one prime source is ATVQ, Amateur Television Quarterly. Each issue contains an assortment of articles and features covering technical topics in both beginner and advanced versions, build-it projects, station operations and repeater news. Co-publishers, Bill Brown WB8ELK and Henry Ruh KB9FO have more than 50 years combined experience in ATV operation from the very simple to great first efforts. Further in depth information may be obtained from articles and items in issues of ATVQ. A cumulative index is contained at the back of this book as a guide to more information.

This book is a condensation of essential information gained from real life, articles and personal experiences during actual ATV ham radio operation and experimentation. This essence of ATV presented here is everything any ham or would be ham, needs to know to become part of a very exciting area of ham radio. This book was also written to provide this information in a non-technical way whenever possible so no prior TV or ham radio knowledge is necessary to understand the topics.

Ham TV can do more than any other mode of operation. It offers all the fun, thrills, excitement, learning opportunities and public service that ham radio offers, plus the added advantage of visual communications.

Video is the communications medium of the present and future. You can come to grips with video, interactive television, digital information, and more in a way that is easier, more intuitive and less expensive than any other ham radio mode. Yes, voice (SSB, FM, AM) digital (CW, RTTY, PACKET, AMPTOR) DX, contests are all good and valid forms of communications. But if you add pictures, its a whole new ball game. Nothing communicates like a good picture and ham TV lets you control the picture like never before!



The Dayton, OH ATV repeater in action.

NOTE: Readers should also note there are three European ATV magazines, *Der TV Amateur*, *VHF Communications* and *CQ-TV*. These are available from England via KM Publications, 5 Ware Orchard, Barby, Nr. Rugby, Warks, England CV23-8UF. Subscriptions for *CQ-TV* and *VHF Communications* are also available to US readers from ATVQ Subscription services. See form in this publication for ordering. *CQ-TV* and *VHF Communications* are English language publications, *Der TV Amateur* is in German.

WHAT FREQUENCIES ARE USED FOR HAM TV?

Ham TV, live television as you watch at home is mostly in the 420-450 MHz. band, (70 cm), with some activity in the 902-928 Mhz. band (33 cm) and activity in the 1240-1300 MHz. band (23 cm). Geographical differences exist because of frequency

use limitations and local coordinations. In addition, there are 2 meter frequencies and HF frequencies used for voice coordination of ATV activity. Details are in the section called Making Contact.

70 CM ATV ACTIVITY

Video carrier	Audio carrier		Use
439.25	443.75	(438-444 MHz.)	simplex and repeater inputs also a few repeater outputs
434.00	438.50	(433-439 MHz.)	simplex and repeater input
426.25	430.75	(425-431 MHz.)	repeater output and some repeater input
421.25	425.75	(420-426 MHz.)	repeater output

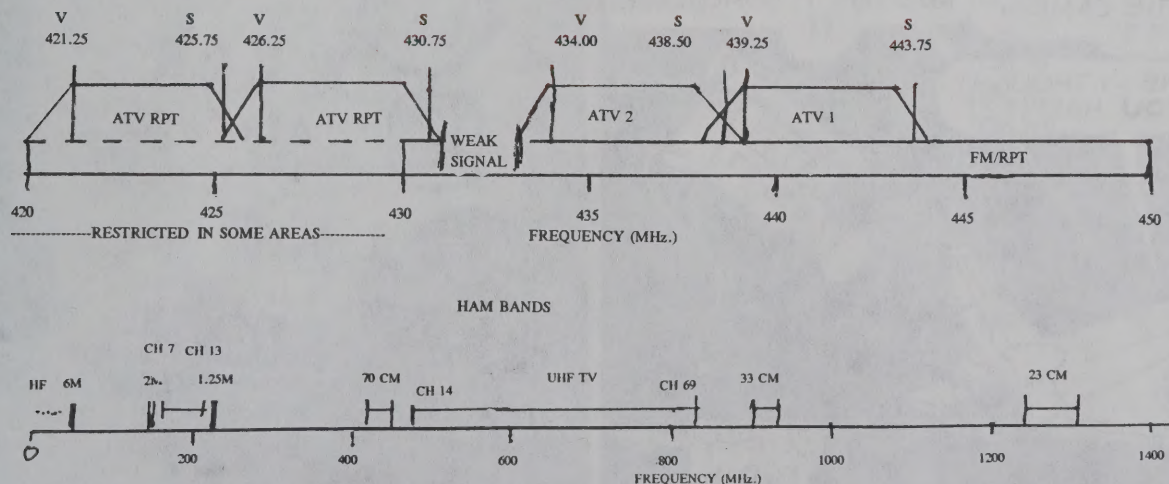
OTHER FREQUENCIES OF INTEREST, TO AVOID CONFUSION

There is often confusion between CABLE TV channel frequencies and over-the-air BROADCAST TV frequencies. Here is a chart and listing of selected CABLE and BROADCAST frequencies and their respective channels. Note the wide difference between TV channel 60 and CABLE TV channel 60. This is explained in more detail a little later in Equipment: Cheap and Easy.

<u>CABLE TV</u> (CATV) channel 60	439.25 (438-444 MHz.)
<u>CABLE TV</u> channel 59	433.75 (432-438 MHz.)
<u>CABLE TV</u> channel 58	427.25 (426-432 MHz.)
<u>CABLE TV</u> channel 57	421.25 (420-426 MHz.)
Broadcast Channel 60	747.25 MHz. (746-752 MHz.)
Broadcast channel 14	471.25 MHz. (470-476 MHz.)
Broadcast channel 13	211.25 MHz. (210-216 MHz.)

As can be seen, the ham TV frequencies we use in the 70 cm band are very similar to the CABLE TV channel frequencies. This allows the use of any cable ready TV or VCR to receive ATV signals. However, the sensitivity of the VCR/TV and the typical home UHF antenna used for UHF broadcast reception is not nearly as good as equipment made for ham use. However, it is handy for short distance work, portable or mobile work where you might not want to carry extra equipment and are willing to sacrifice performance or to work short distances for demonstration purposes.

SPECTRUM USAGE AND 70 CM. BAND USAGE



HOW TO GET STARTED

ALL YOU NEED IS A LITTLE IMAGINATION AND ANY CLASS HAM LICENSE!

HAM TV (ATV) is only on frequencies above 420 MHz. Any class ham license allows you to participate including the new codeless technician class license. Novices can enjoy ATV on the 1200 MHz. novice band. All other license classes enjoy ATV on all frequencies above 420 MHz.

WHERE TO FIND ATV

By convention and agreement, ATV is operated on set frequencies. The popular frequencies are: 439.25, 434.00, 426.25, 421.25, 910.25, 923.25, 1253.25, 1265.00, 1289.25. By far the most popular is 439.25 and in southwest US and Florida 434.00. Issues of ATVQ include news of station and repeater operations which include frequency information. As an example, in southern California, there are 7 ATV repeaters linked together to provide coverage from San Diego to LA to Las Vegas (NV) to Santa Barbara with plans to reach to San Francisco and Phoenix, AZ. ATV is also on 913.25 and 919.25 MHz. Hams share the 900 band with 6 different radio services, including automatic vehicle location systems, ham radio and low power part 15 TV transmitters for home use. These new consumer TV transmitters can provide low cost ham TV exciters/receivers for the band as well as a potential audience!

HOW TO LOCATE OTHER STATIONS

Nearly all ATV in the midwest is horizontal polarization except repeaters which are mostly vertical. Southwest U.S. and Florida is all Vertical polarization. Orient your antenna the same way.

Just tuning around does not offer a great chance of picking up a station as most stations use low power and highly directional antennas. This means the other station, to be seen, must be close to you (within a few miles) or pointing in your direction.

You need to either locate the repeater (listed in the ARRL Repeater Directory under ATV REPEATERS, or first make contact using voice communications. The most common method is to first make contact on a voice frequency, typically 144.34 FM simplex, then once you know who and where the contact is, aim your ATV antennas and switch to video mode.

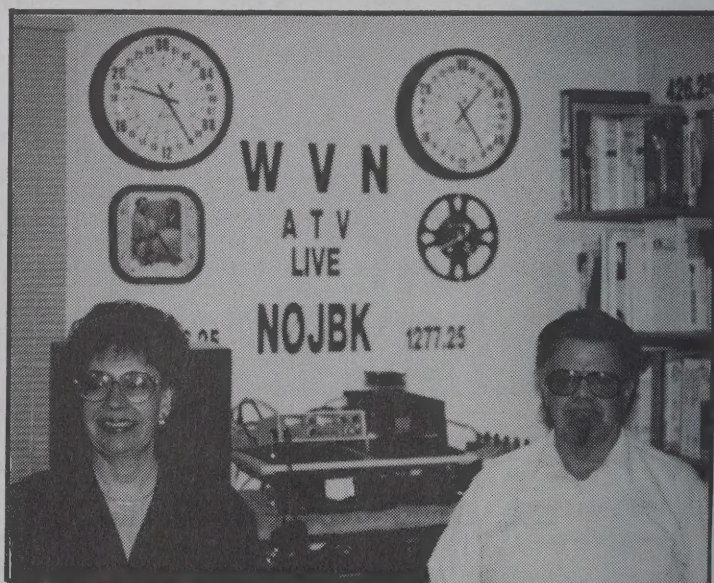
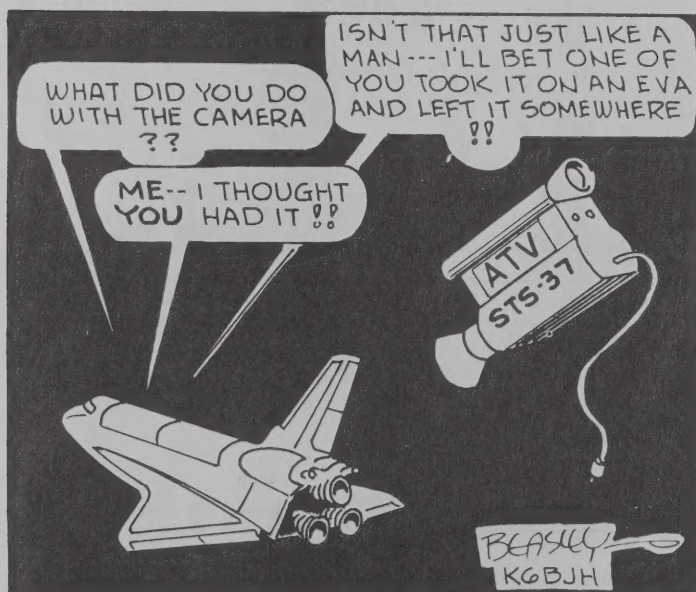
While most of North America uses 144.34 as the voice ATV coordination frequency, there are areas which use other frequencies. Sometimes areas use a 2 meter repeater as well. Again, determine local convention by inquiry. Listings of local frequencies are usually part of operating news items in ATVQ. On the next page are frequencies for areas known to use other than 144.34. Select the areas you will be operating in or select your area from the ATVQ index to read up on local activity. That will provide the local info you need including other ATV stations that you can contact locally. You will also find this information in the ATV NEWS section of any issue of ATVQ.

HF NETS

You may also find stations to work by first making contact on HF. There are regular NETS for ATV activity. If you are east of the Rockies, Tuesday nights at 8 PM EST listen to 3871 KHz. Net control is usually Bill WB8ELK or Bob W9PRD. If you are in the western U. S. there is a net on Sunday at 11 AM PST on 7243 KHz. Net control is usually Dan K6DFM or Ron W6VCF. Southern California also has a very large voice net with its ATV repeater system sponsored by ATN (Amateur Television Network). Contact Mike Collis WA6SVT on 146.43 for information.

There are also many local nets and local ATV repeater groups which sponsor a weekly net on their repeater. Again, check the ARRL Repeater Handbook and contact the repeater trustee or get on the repeater or monitor the 2 meter ATV voice frequency.

Thursday at 9 PM local is the Chicago area net on 144.34. This covers a 150 mile radius. Again, most ATV equipment manufacturers will supply you with local contact information when you purchase equipment.



Sharon N0JBG and Oliver N0JBK, Western Vision Network (Denver) ATV'ers.

MAKING CONTACT

144.34

Most ham TV stations monitor 144.34 which is the national ATV voice coordination frequency. This 2 meter frequency is used both for local nets and for DX in combination with the HF frequencies of 3871 KHz. and 7243 KHz. There are local activities on other frequencies throughout the U.S. and Canada where local preference is a different frequency. Here is a listing of those areas and their local ATV voice coordination frequencies. If an area of interest is not listed, assume that 144.34 is the frequency used. The list was generated in ZIP CODE order. For FM Repeater pair frequencies only the output is listed unless the input does not follow ARRL bandplan. Use the city named

as an AREA guide. The cities listed come from actual ATV operator letters.

This list should also be handy for DX. Just looking at the variety of frequencies used in even one state, explains why there are no DX reports from some areas. Even if the band is open, the areas are on different frequencies and aren't talking to each other on 2 meters! It is strongly recommended that adjacent groups start working on a mutually agreeable frequency, such as 144.34, so that the various areas can work each other when the band is open!

AREA	State	Freq.	AREA	State	Freq.
Nepean	Ont	146.43/147.03	Huntsville	AL	145.33
London	Ont	145.67	Knoxville	TN	146.625
Calgary	Alb	144.8	State of	OH	147.45/144.34
Penticton	BC	146.49/146.43	Reynoldsburg	OH	430.25
Tewksbury	MA	145.29	Indianapolis	IN	147.39/144.34
Holyoak, Greenfield	MA	144.34	Owatonna	MN	147.105
Stratford	CT	146.61	Minneapolis, Mankato	MN	147.57
Windsor Locks	CT	144.34	Harwood	ND	146.67
Meridian	CT	145.34	Bozeman	MT	146.43
Riverside	NJ	147.435	Chicago	IL	144.34/146.73
Jamaica, Islip, Deerpark	NY	146.535	St. Louis	MO	144.38
Westbury	NY	146.04/64	Belton, Kansas City	MO	147.12
Amhurst	NY	144.34	Onaga	KS	146.67
Wyoming	PA	146.61	Pittsburg	KS	146.46
Wapwallopen	PA	146.52	Wellington	KS	146.64
York	PA	146.97/147.47	Kenner	LA	145.47
Pittsburgh	PA	147.03	Bentonville	AR	146.46/144.34
Chester	PA	147.435	Tyler	TX	145.45
Philadelphia, Prussia	PA	147.435	Quinlan	TX	146.76
Gaithersburg	MD	147.00	Boise	ID	145.25
Abingdon	MD	145.13/147.03	Sun City	AZ	147.28
Millersburg	MD	145.13/144.95	Phoenix	AZ	145.17
Baltimore	MD	144.95	Las Vegas, Boulder	NV	146.43
Waynesboro	VA	146.850	Los Angeles area	CA	146.43
Roanoke	VA	145.21	Buellton	CA	146.43
Staunton	VA	146.25/85	Visalia	CA	146.88
Lynchburg	VA	147.375	Hayward/Black Mt. rpt	CA	145.51
Ladson	SC	146.55	Hayward/Mt. Diablo rpt	CA	147.060
Jacksonville	FL	146.955/144.34	Kelseyville	CA	146.675
Miami	FL	145.43	Pahoa	HI	144.170 SSB
New Port Richey	FL	144.43	Seattle, Kent	WA	146.42
Garley	AL	145.33			

ATV SECRETS FOR ASPIRING ATV'ERS

Volume I

If you enjoy ATV and would like more information about ham TV then you should order Volume I of **ATV SECRETS**. Volume I is a non technical guide to everything you ever wanted to know about ham TV but didn't know whom to ask. Volume I includes clear easy to understand explanations of all aspects of HAM TV. Twenty five topics cover television theory, with accurate charts and useful information about video and ham TV operations. Like ATVQ, **ATV SECRETS** Volume I is highly illustrated with over 110 photos, charts and diagrams. **ATV SECRETS** is entirely new and includes information not available anywhere else.

NO LIGHTWEIGHT!

OVER 20,000 WORDS, OVER 110 PHOTOS, DIAGRAMS, CHARTS, ILLUSTRATIONS

ATV SECRETS Volume I is available now. An easy to read, fun tour of every aspect of ham TV. It is a highly condensed essence of ATV operations and technical information about receivers, transmitters, how to DX, What your watt meter is really telling you and much more. It contains no fat, no hyperbole, no trivial matters, no obscure useless information, no 20 year old reprints; just the facts in easy to understand language! **ATV SECRETS** Volume I is destined to be a life long reference book for any video active ham or video hobbyist.

Cover price \$9.98

Order form: Yes, its time to enjoy ham radio again with ham TV. I would like to know more and get the background information that will enable me to fully enjoy, understand and operate ham TV. Here is my order.

NAME _____ CALL _____

ADDRESS _____

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Please send _____ copies of **ATV SECRETS** Volume I at the post paid price of \$11.50 each. (Canada \$12.25)
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Send to: ATVQ, 1545 Lee St., Des Plaines, IL 60018. Or Phone 708 298 2269, FAX 708 803 8994.

A GREAT CHRISTMAS GIFT FOR THAT SPECIAL PERSON IN YOUR LIFE!

ATV SECRETS FOR ADVANCED ATV'ERS

Volume II

If you enjoy this magazine, and would like more technical information about ham TV then you should order Volume II of **ATV SECRETS**. Volume II is the technical extension of ATV SECRETS Volume I and includes dozens of build it projects for all kinds of video hardware and software, television theory, accurate charts and more useful information about video and ham TV. Like this magazine it is highly illustrated with photos and diagrams. Volume II also includes a large section on FM video, a large section on ATV repeaters and how to build them, detailed technical information on all aspects of ham TV.

NO LIGHTWEIGHT

ATV SECRETS Volume II is in its final stage and will be available soon. It is currently over 200 pages long! This is a major effort to produce an encyclopedia of ATV technical information useful for years to come. **ATV SECRETS** Volume II is destined to be a life long reference book for any video active ham or video hobbyist. It includes complete detailed explanations of the NTSC television signal, NTSC color generation and RF transmission. Complete details of the VSB signal and what the real difference is between VSB and DSB video signals. The perfect companion for the technically oriented ham.

Cover price \$24.95

Pre-publication DISCOUNT order form:

Yes, now that I have gotten my feet wet in ham TV, I would like to know more and get the background technical information that will enable me to fully participate, build, understand and enjoy the technical aspects of ham TV and video. Here is my pre-publication order which entitles me to a \$5 discount off the cover price.

NAME _____ CALL _____

ADDRESS _____

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Please send as soon as available, _____ copies of **ATV SECRETS** Volume II at the pre-publication discount price of \$20 each. Check/Visa/Mastercard Card # _____ EXP _____

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from the publishers of ATVQ

NEW PUBLICATIONS FROM ATVQ

ATV SECRETS VOLUME II

Finishing touches were being added to our latest ATV SECRETS book which is being completed at the same time this issue was being completed. Makes for a busy editor! ATV SECRETS Vol. II is a technical handbook of ATV and video information and includes both previously un-published material, and selected construction and theory articles from past issues of ATVQ. Topics include, RF and video filters, down-converters and preamps, power amplifiers, transmitters, FM Video, special effects, station studio and operations, Antennas and much more. Highly illustrated with lots of charts, diagrams and a good selection of hard core technical topics. \$25 post paid. Street date is expected to be late April, hopefully in time for Dayton 92.

The Complete Book of:

A series of short books, each devoted to a single topic. These are collections of articles from ATVQ on a particular subject. Price will be announced after we know printing costs. Watch for these at Dayton and a complete write-up next issue. All books are printed on the same high quality paper used for ATVQ, not photocopies or newsprint. AVAILABLE DURING 1992.

VOYAGE BACK IN TIME

Join the valiant crew of the United Federation fleet in Forward IO of the Order of the Iron Test Pattern. Sip down your favorite Tiberian Brandy or other elixir or libation of delight in your very own LIMITED EDITION, ATVQ 12 oz. ceramic mug with a genuine original Indian Head test pattern on one side and the ATVQ logo on the other. Both logo and TP are in dark brown (TV black) on an antique light tan ceramic. Our only mention of these collectors mugs was in the last issue of ATVQ. They arrived March 6th and we shipped out over 100 the first day. \$9.95 plus post/ups (\$2.90 US postage, 1 lb 4 oz shipping weight) You will want more for friends! Great gift for the video hobbyist!

TEST PATTERNS

Old subscribers will recall we published a set of 4 test patterns a couple years ago. We have about 50 copies left. The high quality glossy 4 side sheet contains a standard convergence ball chart, a gray scale chart (not a true reflectance chart) optical color bars, and a standard resolution chart. These are handy to verify camera operation or use for ID charts (add your call letters) or good wall decorations! Each is 8.5 x 11. \$5 each post paid.

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____ ATV SECRETS Volume II @ 24.95 + postage (\$2.90 US, \$4. Canada)
____ ATVQ/Test Pattern Mugs @ \$9.95 + postage (\$2.90 US, \$3.70 Canada)
____ Test Chart set \$5. Post paid
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____ BATC, Micro and Video Projects, @11.25 post paid
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____ Subscription: VHF Communications @ \$27/yr _____ years

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